

REMARKS

Claims 1-12, 15-17, 21, 22 and 26-44 are pending in this application. Claim 14 has been canceled without prejudice or disclaimer to the subject matter previously recited therein. Claims 1, 15 and 44 have been amended.

Applicants, by canceling or amending any claims herein, make no admission as to the validity of any rejection made by the Examiner against any of these claims. Applicants reserve the right to reassert any of the subject matter of any of the claims canceled herein or the claim scope of any claim amended herein, in a continuing or continuation-in-part application.

No new matter has been added within the meaning of 35 U.S.C. §132. Entry of the amendments is respectfully requested.

I. Double Patenting

The Examiner states that should claim 14 be found allowable claim 17 will be objected to under 37 C.F.R. §1.75 as being a substantial duplicate thereof.

Applicants submit that claim 14 has been cancelled solely for the purpose of advancing prosecution, and thereby the basis of the rejection has been removed. Therefore, the Examiner is respectfully requested to withdraw this rejection.

II. 35 USC §§ 102(b)/103(a)

The Examiner asserts that claims 1-12, 14-17, 21 and 26-43 are rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over Jones et al., in U.S. Patent No. 5,024,827, in view of Li et al., in “*A Novel Method for Preparation of Nanocrystalline Rutile TiO₂ Powders by Liquid Hydrolysis of TiCl₄*”, J. Mater. Chem., Vol. 12, pps. 1387-1390, (2002).

The Examiner states that Jones et al. disclose a process for manufacturing a particulate titanium dioxide product, comprising providing an aqueous solution of titanium oxychloride having a content of 147 g TiO₂/l calculated as TiO₂; adding anatase titanium dioxide particles as crystal nuclei at 0.3-3% by weight calculated on the basis of the total titanium content in the solution of titanium oxychloride and expressed TiO₂ as an aqueous suspension with a 43.4 g TiO₂/l content to the aqueous solution of titanium oxychloride; precipitating hydrated titanium dioxide particles at up to 200°C in an autoclave under normal pressure; washing the precipitated titanium dioxide product with a base having a pH ranging 6-10; and calcining the precipitated hydrated titanium dioxide product at greater than 500°C. The Examiner further states that the

photocatalytically active titanium dioxide product has a crystal size with an average diameter of 10-200 nm, activity in the UV region of light and in the visible region of light.

It is the Examiner's position that Li et al. disclose a calcination temperature of 150°C with rutile nuclei and a rutile product.

The Examiner takes the position that the cited art differs from the instant subject matter at least as follows: a) that the content of TiO₂ of the aqueous titanium oxychloride solution overlaps and/or falls within the claimed ranges; b) that the percentage of range of TiO₂ particles added as crystal nuclei overlaps and/or lies within the claimed ranges; and c) the precipitation reaction temperature overlaps and/or lies within the claimed ranges.

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have selected a percentage of TiO₂ that overlaps with the instant claims because it is the Examiner's allegation a *prima facie* case of obviousness exists since the claimed ranges overlap or lie inside ranges disclosed by the cited references. Further it is the Examiner's position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a calcination temperature within the instantly claimed range using rutile nuclei to yield a rutile product, because a *prima facie* case of obviousness exists wherein the claimed ranges and cited art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties.

In view of the following, this rejection is respectfully traversed.

The test for anticipation is whether each and every element as set forth is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP § 2131. The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki*

Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP §2131. The elements must also be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

To establish a *prima facie* case of obviousness, the Examiner must satisfy three requirements. First, as the U.S. Supreme Court very recently held in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), “a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. ...it [may] be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. ...it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” (*KSR*, 550 U.S. 398 at 417.) Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *Amgen Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). Lastly, the prior art references must teach or suggest all the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970).

Applicants respectfully submit that the cited reference does not teach or suggest every element of the present claims as required for anticipation under 35 USC § 102 (b). Additionally, it is submitted that a *prima facie* case of obviousness has not been established because nothing in

the applied references teach or suggest all of the elements of the present claims, as required by *In re Wilson*.

Claim 1 is directed to a process for manufacturing a particulate titanium dioxide product, comprising: providing an aqueous solution of titanium oxychloride having a content of >90 g TiO_2/l calculated as TiO_2 ; **adding an amount of sulphate in the range of 1 to 5% by weight, calculated on the basis of the amount of TiO_2 in the solution, into the aqueous solution of titanium oxychloride**; adding titanium dioxide particles as crystal nuclei to the aqueous solution of titanium oxychloride; precipitating hydrated titanium dioxide particles at a temperature of 50 to 100°C , the temperature being below the boiling point of the aqueous solution of titanium oxychloride and at normal pressure to obtain a precipitated hydrated titanium dioxide product; and calcining the precipitated hydrated titanium dioxide product at a temperature of 100 to 500°C to obtain a titanium dioxide product is comprised of more than 70% rutile in a crystal form. For clarity's purpose, Applicants point out that claim 1 has been amended to include the subject matter of claim 13, which has not been rejected. Claims 2-12, 15-17, 21 and 26-43 depend either directly or indirectly from claim 1. Claim 14 has been cancelled without prejudice or disclaimer to the subject matter previously contained therein.

In contrast, as acknowledged by the Examiner at page 12 of the instant Office Action, Jones et al. and Li et al. do not teach, either directly or indirectly, adding an amount of sulphate in the range of 1 to 5% by weight, calculated on the basis of the amount of TiO_2 in the solution, into the aqueous solution of titanium oxychloride.

Therefore, Applicants submit that Jones et al. in view of Li et al. do not do not anticipate, or render the presently claimed subject matter obvious, within the meaning of either of 35 USC

§§ 102(b) or 103(a). Accordingly, the Examiner is respectfully requested to withdraw this rejection.

CONCLUSION

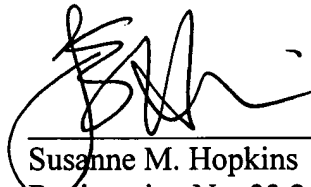
In view of the foregoing, Applicant submits that the application is in condition for immediate allowance. Early notice to that effect is earnestly solicited. The Examiner is invited to contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

In the event this paper is not timely filed, Applicants petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

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